

REMARKS

The text of the specification has been amended merely to correct minor inadvertent typographical or clerical oversights. No new matter has been added to the specification by virtue of these amendments.

A first examination of the application on the merits is respectfully requested.

EXPRESS MAIL LABEL NO:

EV 212 983 868 US

Respectfully submitted,



K. Alison de Runtz
Attorney of Record
Reg. No. 37,119

Appendix: Replacement Paragraphs in Marked Form

Item 1:

The present invention provides a composition for chemical-mechanical polishing which comprises at least one abrasive particle having a surface at least partially coated by a catalyst. The catalyst comprises a metal other than a metal of Group 4(b), Group 5(b) or Group 6(b) of the Periodic Table of Elements. Generally, metals of Group 1(b) or Group 8 are suitable candidates, as are metals having a standard oxidation potential of from about -0.52 to about -0.25 eV. It is believed that the catalyst-coated abrasive favorably interacts with any one of a number of oxidizing agents typically employed in chemical-mechanical polishing compositions. Thus, the composition also comprises such an oxidizing agent. The oxidizing agent is preferably in the form of an organic or inorganic per compound, although other oxidizing agents, such as hydroxylamine for example, may be used.

Item 2:

The composition provides very desirable material removal rates, for example, up to 15,000 Angstroms (\AA) per minute, in a CMP process. This removal rate is so good that it may be desirable to adjust the composition or the CMP process to bring the rate down to a level suitable for certain applications, such as the CMP of very thin films, for example, a copper film of about 3000 \AA in thickness. The composition is effective when used in conventional CMP processes, as well as CMP processes having relatively low carrier pressures. Substrates polished using the composition show good uniformity values, as reflected by relatively low within-wafer nonuniformity percentages. For example, in one example provided herein, the within-wafer nonuniformity of the polished substrate was about 4.57 percent. While photodissociation is advantageously employed in connection with the present invention, other techniques for porogen removal are included as well. For example, a porogen that vaporizes (or reacts with a reactant introduced for that purpose) at a certain temperature, T , can also be used if T is greater than the cross-linking temperature of the dielectric precursor (thereby avoiding the route of Figure

1E), but less than the temperature at which disruption of the dielectric backbone, 4, occurs.

Item 3:

The composition generally comprises at least one oxidizing agent and at least one abrasive that is at least partially coated by a catalyst, as further described herein. Typically, the abrasive component comprises a portion of abrasive that is coated with catalyst (sometimes referred to herein as "coated [catalyst] abrasive") and a portion of abrasive that is not coated with catalyst (sometimes referred to herein as "normal abrasive"), although only the former need be present. For example, the abrasive may comprise a ratio of coated abrasive to normal abrasive of about 1 to about 9. Each of the components of the composition and typical, preferred, and more preferred amounts thereof, in approximate weight percent (wt. %) relative to the composition, are provided below in Table 1.